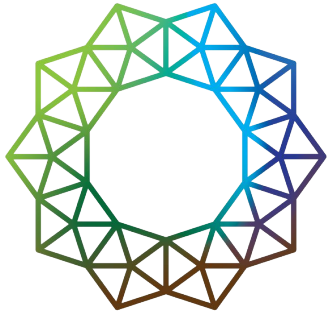
U.S. DEPARTMENT OF ENERGY | Office of Science

AmeriFlux Webinar

For Data Users



AMERIFLUX
MANAGEMENT PROJECT

Webinar Goals:

Who should attend?

- Data users who are interested in AmeriFlux data products.
- Data providers who are interested in learning more about how their data are used.

Presentation (~40 minutes)

- AmeriFlux overview
- AmeriFlux data
- Data use and data use policy
- Data discovery web features
- Gap-filled and partitioned data from ONEFlux
- Data users panel
- Feedback from you about AmeriFlux data

This webinar is being recorded.

Mute during presentation.
Unmute for Q&A.

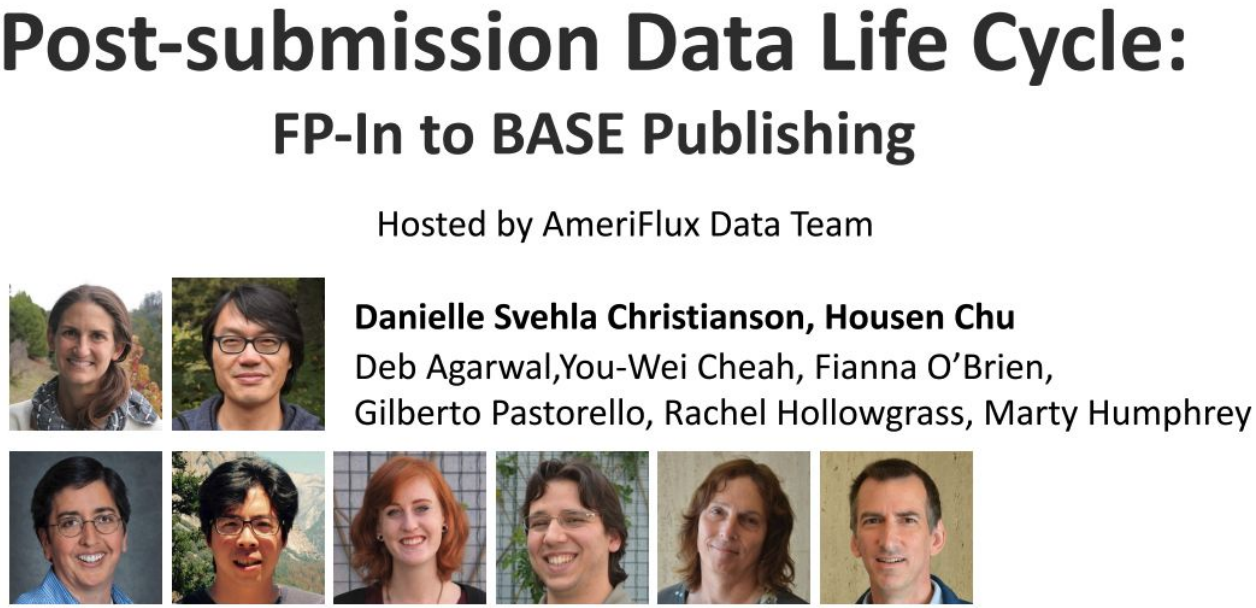
View chat window.
Send messages for questions, comments & zoom help.

Technical support in webinar
AMP-webinars@lbl.gov

Poll:

Have you downloaded data from the AmeriFlux website before?

Check out the “Data Life Cycle” webinar



Slides and recordings of all previous webinars are available at:
https://ameriflux.lbl.gov/community/amp-webinar-series/

About AmeriFlux

- Created in 1996 by a group of scientists.
- 15 sites in 1997.
- In 2012, the U.S. DOE established the AmeriFlux Management Project (AMP) at Lawrence Berkeley National Laboratory (LBNL).
- 390 sites with published data today.

=> 2605 site years of data.

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Updated AmeriFlux Data Use License

Deb Agarwal
AMP Data Team lead

- Use the Data-Download form to describe how you plan to use the data and if you plan to use in publications. This statement is sent to the data contributor(s), and then posted to the AmeriFlux Data Download Log.
- When you start in-depth analysis that may result in a publication, ***contact the data contributors directly***, so that they have the opportunity to contribute substantively and become a co-author.

Acknowledge AmeriFlux data in publications

- Cite the relevant site DOI and dataset citation listed on its Site General Info page (DOI tab) or use Site Set for DOI citation generation.
- Inform all data providers when publications are about to be published.
- Acknowledge the AmeriFlux data resource: “Funding for AmeriFlux data resources was provided by the U.S. Department of Energy’s Office of Science.”

Acknowledge AmeriFlux data in presentations

- Use the AmeriFlux logo and/or the AmeriFlux web link (https://ameriflux.lbl.gov)
- List AmeriFlux sites using their SiteIDs and/or site name

New AmeriFlux CC BY 4.0 Data Use License (by Fall 2021)

CCby4

- Data free for use and reuse
- Proper citation/acknowledgement still required (specifics provided)
- Sites receive data download notifications

Support sites who remain on older "AmeriFlux policy"

- Data quality checks and BASE publish
- Limited data and tech services – e.g. no ONEFlux processing, lower priority for services
- One data policy per site
- AmeriFlux core sites and NEON have indicated that their data can be CCby4 - starting invites now and have 108 sites moving so far.

New CC BY 4.0 AmeriFlux License

CC-BY-4.0 data are available following the guidelines of the CC-BY-4.0 data usage license (Creative Commons by Attribution 4.0 International; https://creativecommons.org/licenses/by/4.0/). The CC-BY-4.0 license specifies that the data user is free to Share (copy and redistribute the material in any medium or format) and/or Adapt (remix, transform, and build upon the material) for any purpose.

Use of AmeriFlux data shared under the CC-BY-4.0 license should follow these attribution guidelines:

* For each AmeriFlux site used: Provide a citation to the site's dataset. The citation should include the dataset DOI.

Note:

Collaboration with data providers (AmeriFlux PIs) is not required under CCBy4.0, but it can help avoid misinterpretation or other data issues and is appreciated by data providers.

Regardless, it is recommended that data users inform data providers of forthcoming publications using a site's data. An email list of AmeriFlux PIs for the downloaded sites is provided to the data user with data download.

AmeriFlux Data

What is “BASE”?

½ hourly or hourly
time series observations

AmeriFlux Data

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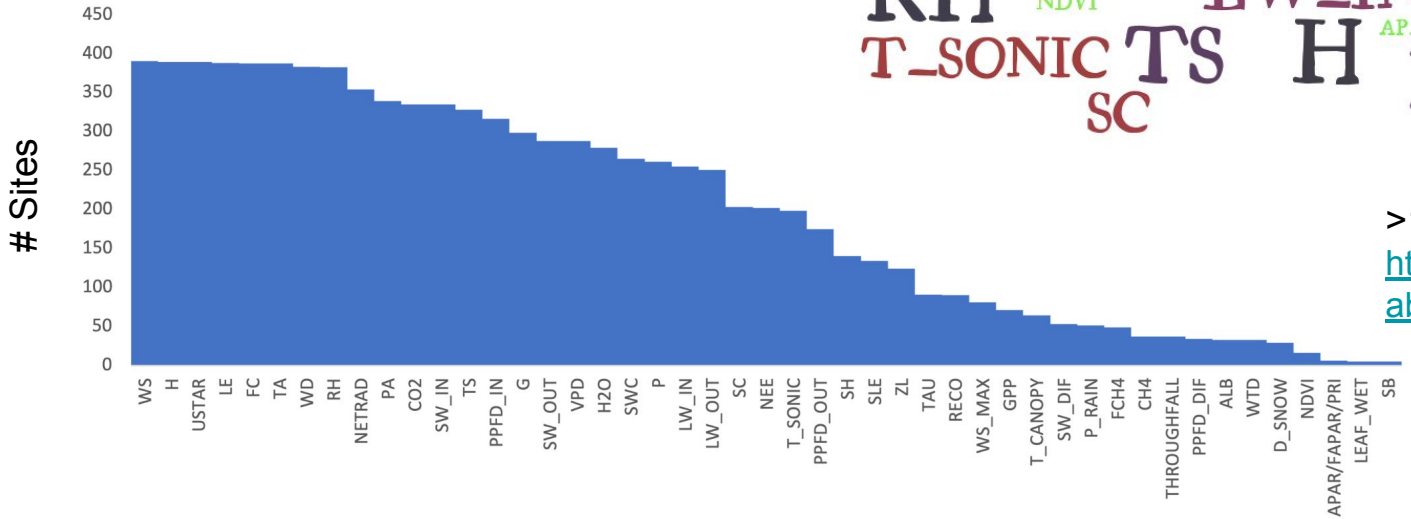

>130 variables
https://ameriflux.lbl.gov/data/aboutdata/data-variables

What to expect from AmeriFlux data?

Pros:

- A lot of data!
- Diversity - of ecosystem types and environments.
- Direct and continuous observations of how ecosystems respond to environmental change.
- Carbon, water, energy and climate.

Cons:

- Uncertainty - both random and systematic error
- Gaps - instruments break, power goes off, weather becomes ‘unclement’, towers fall over, etc.
- The unexplained (beavers build dams, trees mast, cicadas emerge en mass, ice-storms defoliate)

AmeriFlux Data

Who's BAD*M*?!

'Know thy site!'
Ray Leuning

AmeriFlux Data

Who's BAD*M*?!
Biological ***A***ncillary ***D***ata ***M***etadata

'Know thy site!'
Ray Leuning

Site General Info

- COUNTRY (Geographic Country)
- URL_AMERIFLUX (AmeriFlux URL)
- HEADER (Site ID, Site Name, Submission details)
- TEAM_MEMBER (Team Membership)
- TEAM_CONTACT
- SHIPPING_ADDRESS
- NETWORK (Network Affiliations)
- FLUX_MEASUREMENTS
- STATE (Geographic State)
- SITE_DESC (Site Description)
- RESEARCH_TOPIC
- SITE_FUNDING
- LOCATION (Geographic Location)
- IGBP (International Geosphere-Biosphere Programme)
- LAND_OWNERSHIP
- URL (Site Website)
- REFERENCE_PAPER (References)
- ACKNOWLEDGEMENT
- UTC_OFFSET
- CLIM_AVG (Average Climate)
- SITE_CHAR (Site Characteristics)
- DOM_DIST_MGMT (Dominant Disturbance and Management)
- TOWER_TYPE
- TOWER_POWER

Doi

- DOI (Digital Object Identifier)
- DOI_ORGANIZATION (DOI Organizations)
- DOI_CONTRIBUTOR (DOI Contributors)
- DOI_RELATED_DATA_DOI (Related DOI Information)

VegCover

- SPP (Species Cover)
- LAI (Leaf Area Index)
- HEIGHTC (Canopy Height)
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- BASAL_AREA
- TREES_NUM (Number of Trees)
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- PHEN_EVENT_TYPE (Phenological Events)

Instrument

- INST (Instrument Information)
- INSTPAIR (Instrument Pairing Information)

Disturbance and Management

- DM_AGRICULTURE (Crop Management)
- DM_ENCROACH (Encroachment)
- DM_EXT_WEATHER (Extreme Weather)
- DM_FERT_M (Mineral Fertilization)
- DM_FERT_O (Organic Fertilization)
- DM_FIRE (Fire)
- DM_FORESTRY (Forestry Management)
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Instrument Ops

- INSTOM (Instrument Operations)

Soil

- SOIL_CHEM (Soil Chemical Concentration)
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- SOIL_ORDER
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BIF: the BADM Interchange Format

AmeriFlux Data

Who's BAD*M*?!
Biological ***A***ncillary ***D***ata ***M***etadata

5149	US-Ha1	17698	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5150	US-Ha1	17698	GRP_TREES_NUM	TREES_NUM_DATE	20101207
5151	US-Ha1	17698	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5152	US-Ha1	17698	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5153	US-Ha1	17743	GRP_TREES_NUM	TREES_NUM	0.39
5154	US-Ha1	17743	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5155	US-Ha1	17743	GRP_TREES_NUM	TREES_NUM_DATE	20111201
5156	US-Ha1	17743	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5157	US-Ha1	17743	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5158	US-Ha1	17788	GRP_TREES_NUM	TREES_NUM	0.39
5159	US-Ha1	17788	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5160	US-Ha1	17788	GRP_TREES_NUM	TREES_NUM_DATE	20121204
5161	US-Ha1	17788	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5162	US-Ha1	17788	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5163	US-Ha1	17833	GRP_TREES_NUM	TREES_NUM	0.39
5164	US-Ha1	17833	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5165	US-Ha1	17833	GRP_TREES_NUM	TREES_NUM_DATE	20131212
5166	US-Ha1	17833	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5167	US-Ha1	17833	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5168	US-Ha1	17888	GRP_TREES_NUM	TREES_NUM	0.39
5169	US-Ha1	17888	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5170	US-Ha1	17888	GRP_TREES_NUM	TREES_NUM_DATE	19991027
5171	US-Ha1	17888	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5172	US-Ha1	17888	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5173	US-Ha1	17948	GRP_TREES_NUM	TREES_NUM	0.39
5174	US-Ha1	17948	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5175	US-Ha1	17948	GRP_TREES_NUM	TREES_NUM_DATE	20001024
5176	US-Ha1	17948	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5177	US-Ha1	17948	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5178	US-Ha1	18007	GRP_TREES_NUM	TREES_NUM	0.39
5179	US-Ha1	18007	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5180	US-Ha1	18007	GRP_TREES_NUM	TREES_NUM_DATE	20011026
5181	US-Ha1	18007	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5182	US-Ha1	18007	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5183	US-Ha1	18067	GRP_TREES_NUM	TREES_NUM	0.39
5184	US-Ha1	18067	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5185	US-Ha1	18067	GRP_TREES_NUM	TREES_NUM_DATE	20021114
5186	US-Ha1	18067	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5187	US-Ha1	18067	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
5188	US-Ha1	18127	GRP_TREES_NUM	TREES_NUM	0.39
5189	US-Ha1	18127	GRP_TREES_NUM	TREES_NUM_SPP	Acer pennsylvanicum
5190	US-Ha1	18127	GRP_TREES_NUM	TREES_NUM_DATE	20031113
5191	US-Ha1	18127	GRP_TREES_NUM	TREES_NUM_SPATIAL_REP_NUMBER	54
5192	US-Ha1	18127	GRP_TREES_NUM	TREES_NUM_SPATIAL_VARIABILITY	2.28
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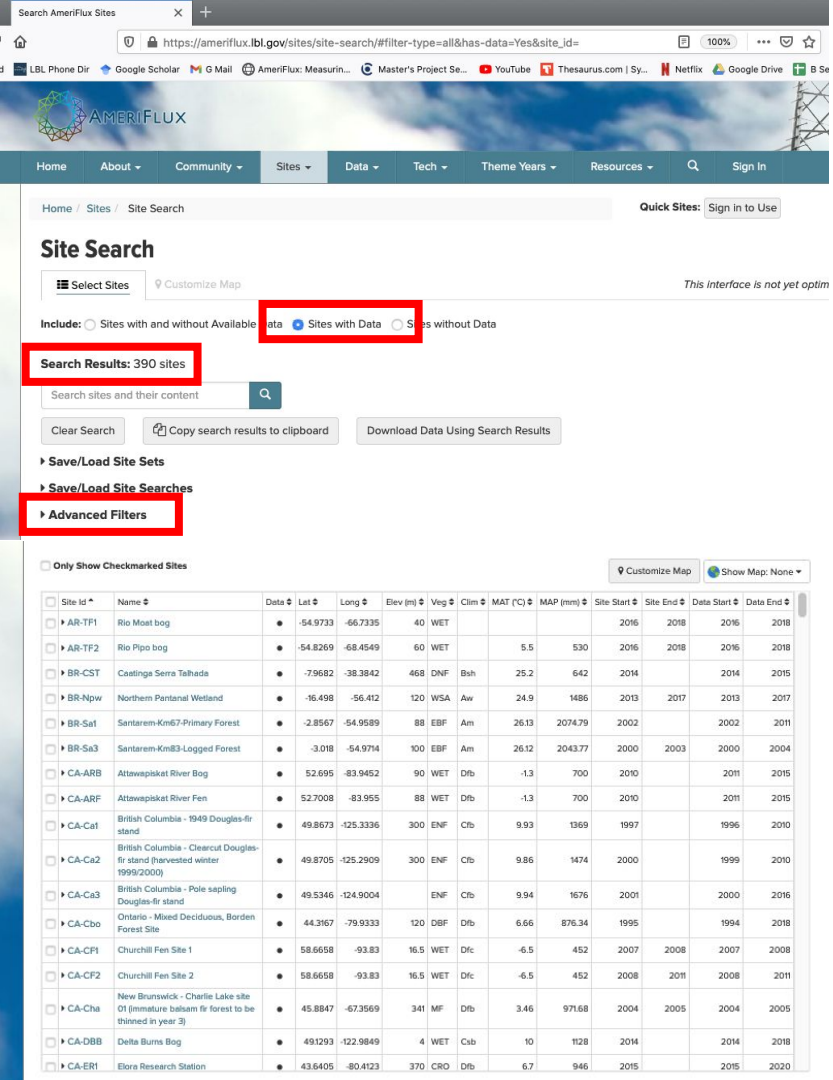
Poll:

Have you used BADM data before?

AmeriFlux Data Discovery

Margaret
Torn
AMP Lead PI

Search / Download / Map / Site Sets

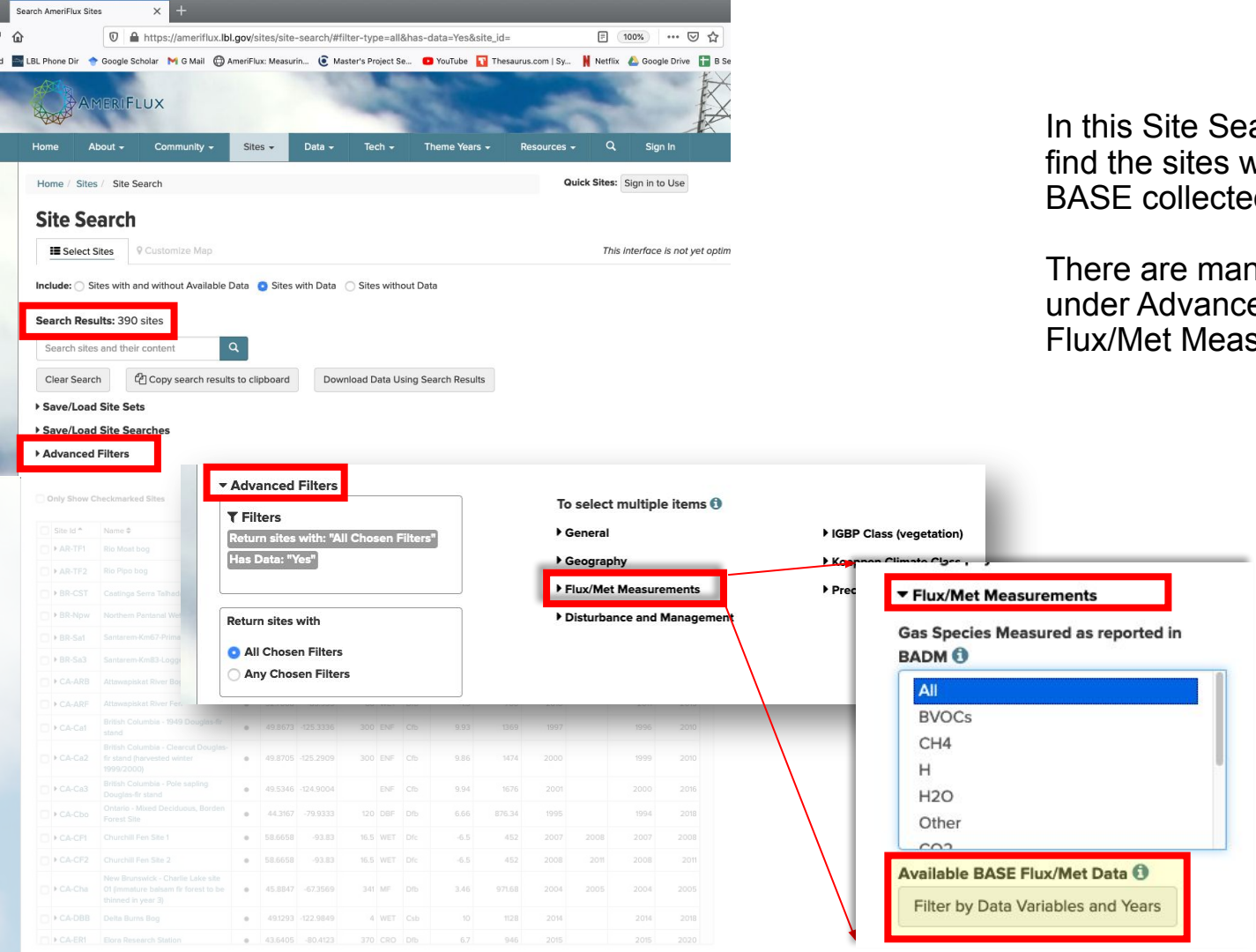


You can download data for 390 AmeriFlux sites at ameriflux.lbl.gov.

How do you find the sites (and data) you want to use?

The Site Search tool can help!

(check out the individual site info pages, too)

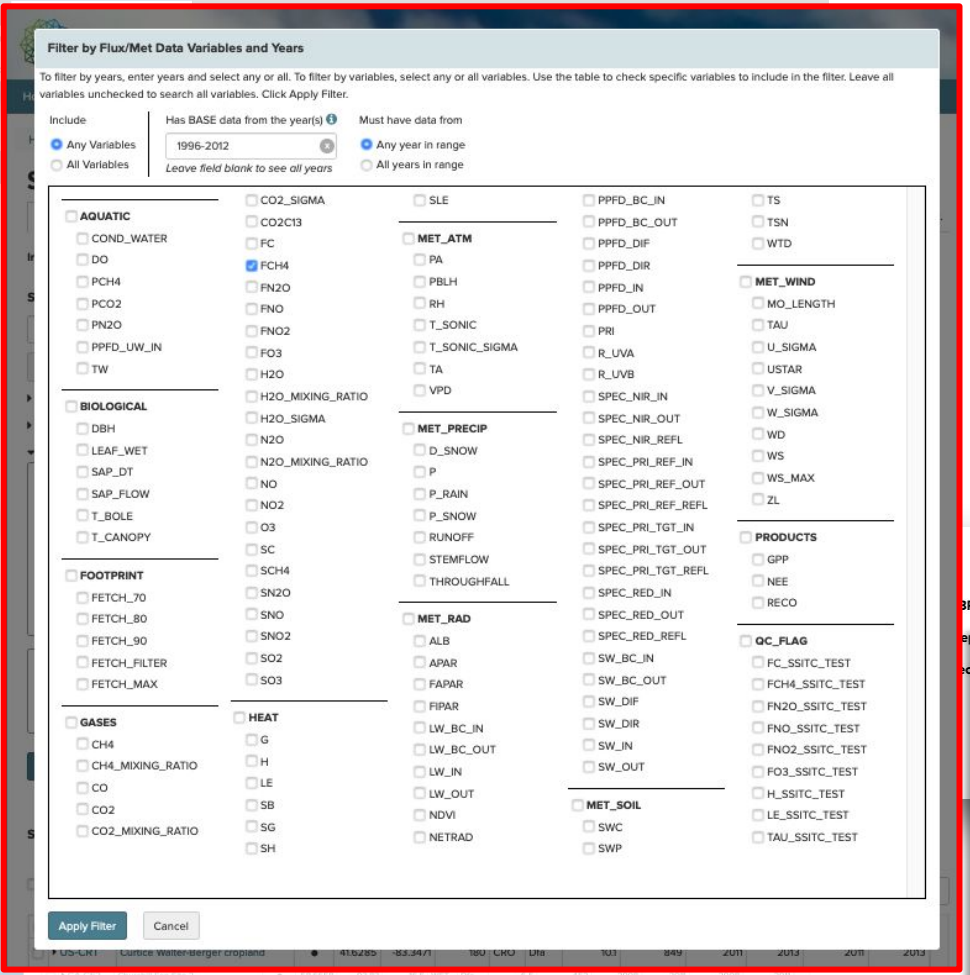


In this Site Search example, I want to find the sites with methane flux data in BASE collected before 2012.

There are many useful search terms under Advanced Filters. We'll use Flux/Met Measurements.

Tip: "Gas Species Measured" are from BADM site metadata; the flux data might not be in BASE.

We'll look at Available BASE Flux/Met Data



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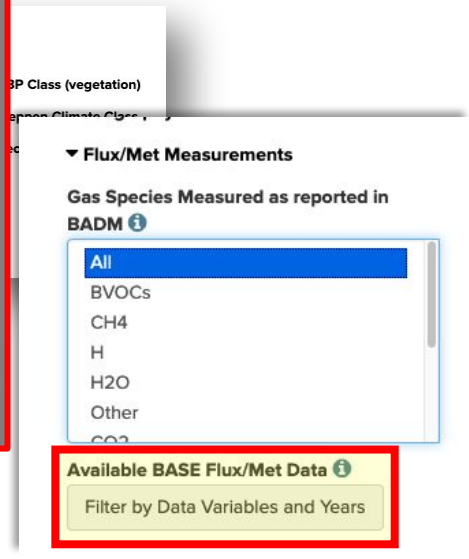
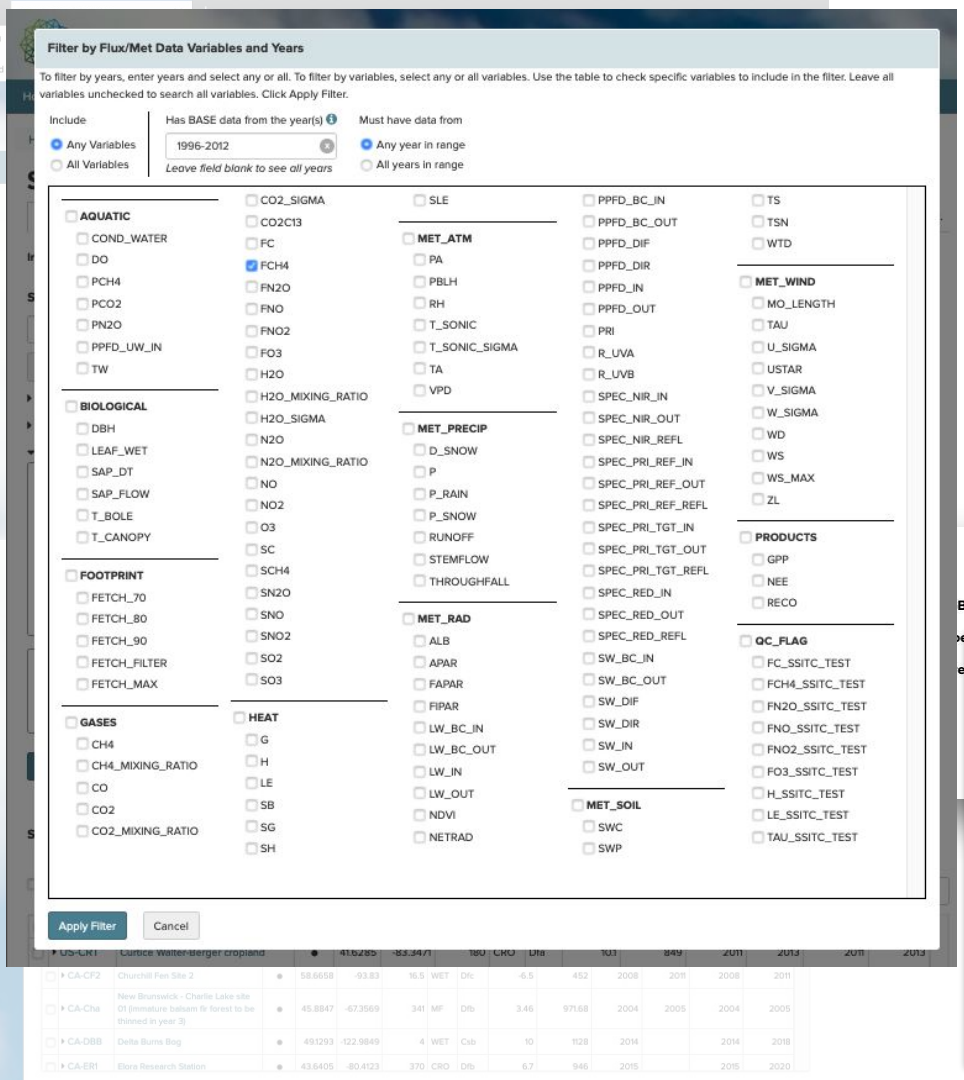
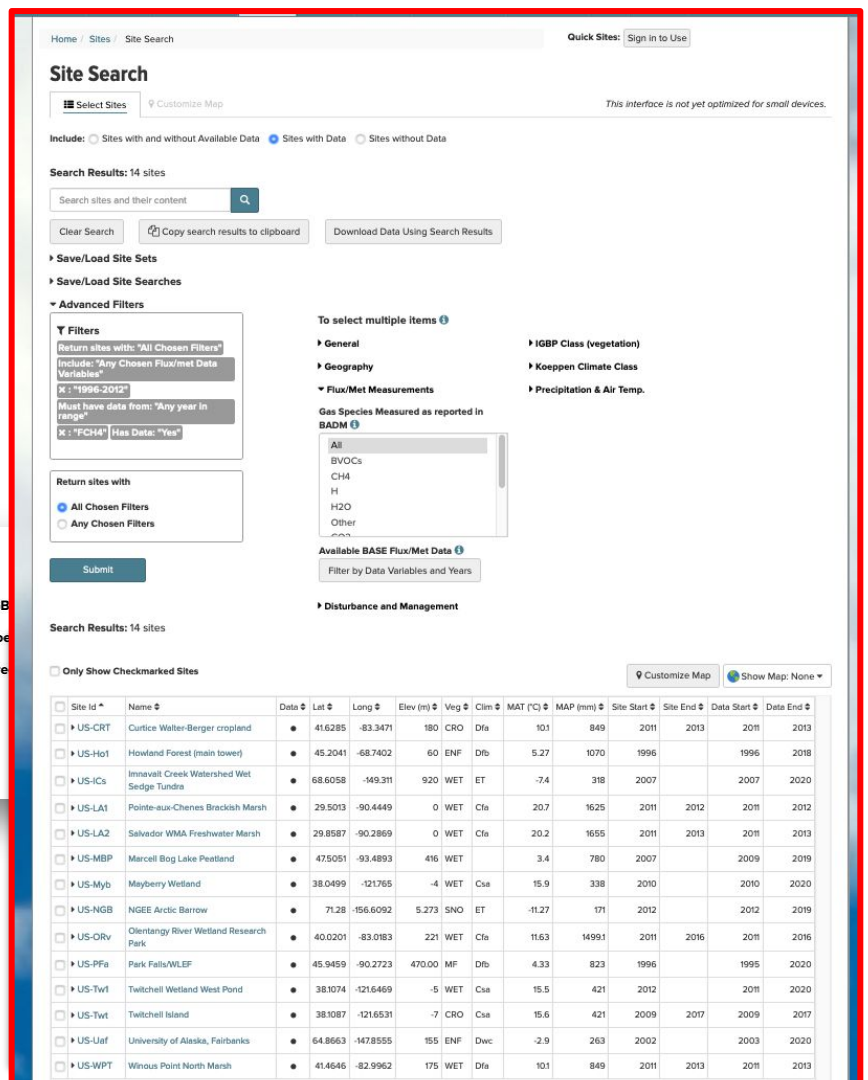



Filter by Flux/Met Data Variables and Years
To filter by years, enter years and select any or all. To filter by variables, select any or all variables. Use the table to check specific variables to include in the filter. Leave all variables unchecked to search all variables. Click Apply Filter.
Include
Any Variables
All Variables
Has BASE data from the year(s)
1996-2012
Leave field blank to see all years
Must have data from
Any year in range
All years in range
AQUATIC
COND_WATER
DO
PCH4
PCO2
PN2O
PPFD_UW_IN
TW
BIOLOGICAL
DBH
LEAF_WET
SAP_DT
SAP_FLOW
T_BOLE
T_CANOPY
FOOTPRINT
FETCH_70
FETCH_80
FETCH_90
FETCH_FILTER
FETCH_MAX
GASES
CH4
CH4_MIXING_RATIO
CO
CO2
CO2_MIXING_RATIO
CO2_SIGMA
CO2C13
FC
FCH4
FN2O
FNO
FNO2
FO3
H2O
H2O_MIXING_RATIO
H2O_SIGMA
N2O
N2O_MIXING_RATIO
NO
NO2
O3
SC
SCH4
SN2O
SNO
SNO2
SO2
SO3
HEAT
G
H
LE
SB
SG
SH
SLE
MET_ATM
PA
PBLH
RH
T_SONIC
T_SONIC_SIGMA
TA
VPD
MET_PRECIP
D_SNOW
P
P_RAIN
P_SNOW
RUNOFF
STEMFLOW
THROUGHFALL
MET_RAD
ALB
APAR
FAPAR
FIPAR
LW_BC_IN
LW_BC_OUT
LW_IN
LW_OUT
NDVI
NETRAD
PPFD_BC_IN
PPFD_BC_OUT
PPFD_DIF
PPFD_DIR
PPFD_IN
PPFD_OUT
PRI
R_UVA
R_UVB
SPEC_NIR_IN
SPEC_NIR_OUT
SPEC_NIR_REFL
SPEC_PRI_REF_IN
SPEC_PRI_REF_OUT
SPEC_PRI_REF_REFL
SPEC_PRI_TGT_IN
SPEC_PRI_TGT_OUT
SPEC_PRI_TGT_REFL
SPEC_RED_IN
SPEC_RED_OUT
SPEC_RED_REFL
SW_BC_IN
SW_BC_OUT
SW_DIF
SW_DIR
SW_IN
SW_OUT
MET_SOIL
SWC
SWP
TS
TSN
WTD
MET_WIND
MO_LENGTH
TAU
U_SIGMA
USTAR
V_SIGMA
W_SIGMA
WD
WS
WS_MAX
ZL
PRODUCTS
GPP
NEE
RECO
QC_FLAG
FC_SSITC_TEST
FCH4_SSITC_TEST
FN2O_SSITC_TEST
FNO_SSITC_TEST
FNO2_SSITC_TEST
FO3_SSITC_TEST
H_SSITC_TEST
LE_SSITC_TEST
TAU_SSITC_TEST
Apply Filter
Cancel

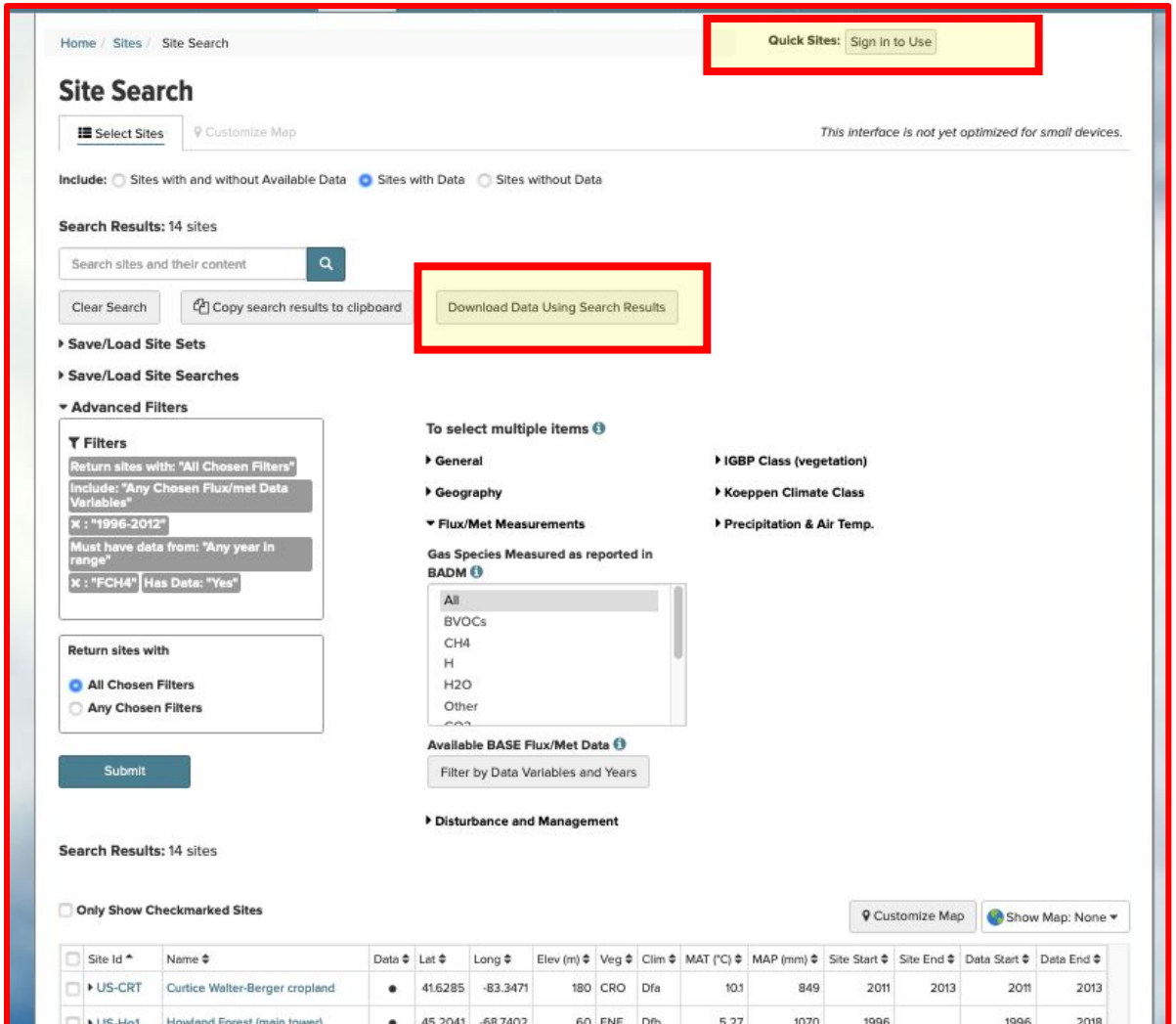

Home / Sites / Site Search
Quick Sites:
Sign in to Use
Site Search
Select Sites
Customize Map
This interface is not yet optimized for small devices.
Include: Sites with and without Available Data
Sites with Data
Sites without Data
Search Results: 14 sites
Search sites and their content
Clear Search
Copy search results to clipboard
Download Data Using Search Results
Save/Load Site Sets
Save/Load Site Searches
Advanced Filters
Filters
Return sites with: "All Chosen Filters"
Include: "Any Chosen Flux/met Data Variables"
x : "1996-2012"
Must have data from: "Any year in range"
x : "FCH4" Has Data: "Yes"
Return sites with
All Chosen Filters
Any Chosen Filters
Submit
To select multiple items
General
Geography
Flux/Met Measurements
IGBP Class (vegetation)
Koeppen Climate Class
Precipitation & Air Temp.
Gas Species Measured as reported in BADM
All
BVOCs
CH4
H
H2O
Other
Available BASE Flux/Met Data
Filter by Data Variables and Years
Disturbance and Management
Search Results: 14 sites
Only Show Checkmarked Sites
Customize Map
Show Map: None
Site Id
Name
Data
Lat
Long
Elev (m)
Veg
Clim
MAT (°C)
MAP (mm)
Site Start
Site End
Data Start
Data End
US-CRT Curtice Walter-Berger cropland 41.6285 -83.3471 180 CRO Dfa 10.1 849 2011 2013 2011 2013
US-Ho1 Howland Forest (main tower) 45.2041 -68.7402 60 ENF Dfb 5.27 1070 1996 1996 2018
US-ICs Imnavait Creek Watershed Wet Sedge Tundra 68.6058 -149.311 920 WET ET -7.4 318 2007 2007 2020
US-LA1 Pointe-aux-Chenes Brackish Marsh 29.5013 -90.4449 0 WET Cfa 20.7 1625 2011 2012 2011 2012
US-LA2 Salvador WMA Freshwater Marsh 29.8587 -90.2869 0 WET Cfa 20.2 1655 2011 2013 2011 2013
US-MBP Marcell Bog Lake Peatland 47.5051 -93.4893 416 WET 3.4 780 2007 2009 2019
US-Myb Mayberry Wetland 38.0499 -121.765 -4 WET Csa 15.9 338 2010 2010 2020
US-NGB NGEE Arctic Barrow 71.28 -156.6092 5.273 SNO ET -11.27 171 2012 2012 2019
US-ORv Olentangy River Wetland Research Park 40.0201 -83.0183 221 WET Cfa 11.63 1499.1 2011 2016 2011 2016
US-PFa Park Falls/WLEF 45.9459 -90.2723 470.00 MF Dfb 4.33 823 1996 1995 2020
US-Tw1 Twitchell Wetland West Pond 38.1074 -121.6469 -5 WET Csa 15.5 421 2012 2011 2020
US-Twt Twitchell Island 38.1087 -121.6531 -7 CRO Csa 15.6 421 2009 2017 2009 2017
US-Uaf University of Alaska, Fairbanks 64.8663 -147.8555 155 ENF Dwc -2.9 263 2002 2003 2020
US-WPT Winous Point North Marsh 41.4646 -82.9962 175 WET Dfa 10.1 849 2011 2013 2011 2013

Now that I’ve identified the 14 sites that have methane flux data available up to 2012, how do I…

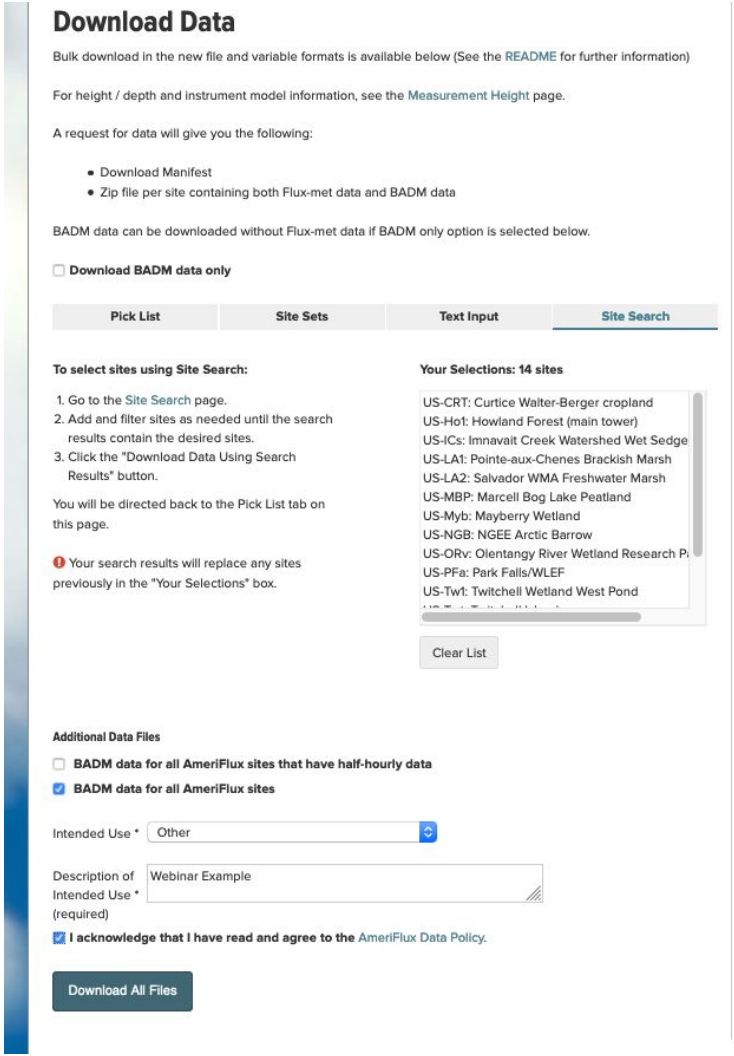
- Download data for those sites?
- Make a map of the sites?
- Save a “site set” to work with later?

- Download data for those sites?

1. Sign In.
2. Click “Download Data Using Search Results.”

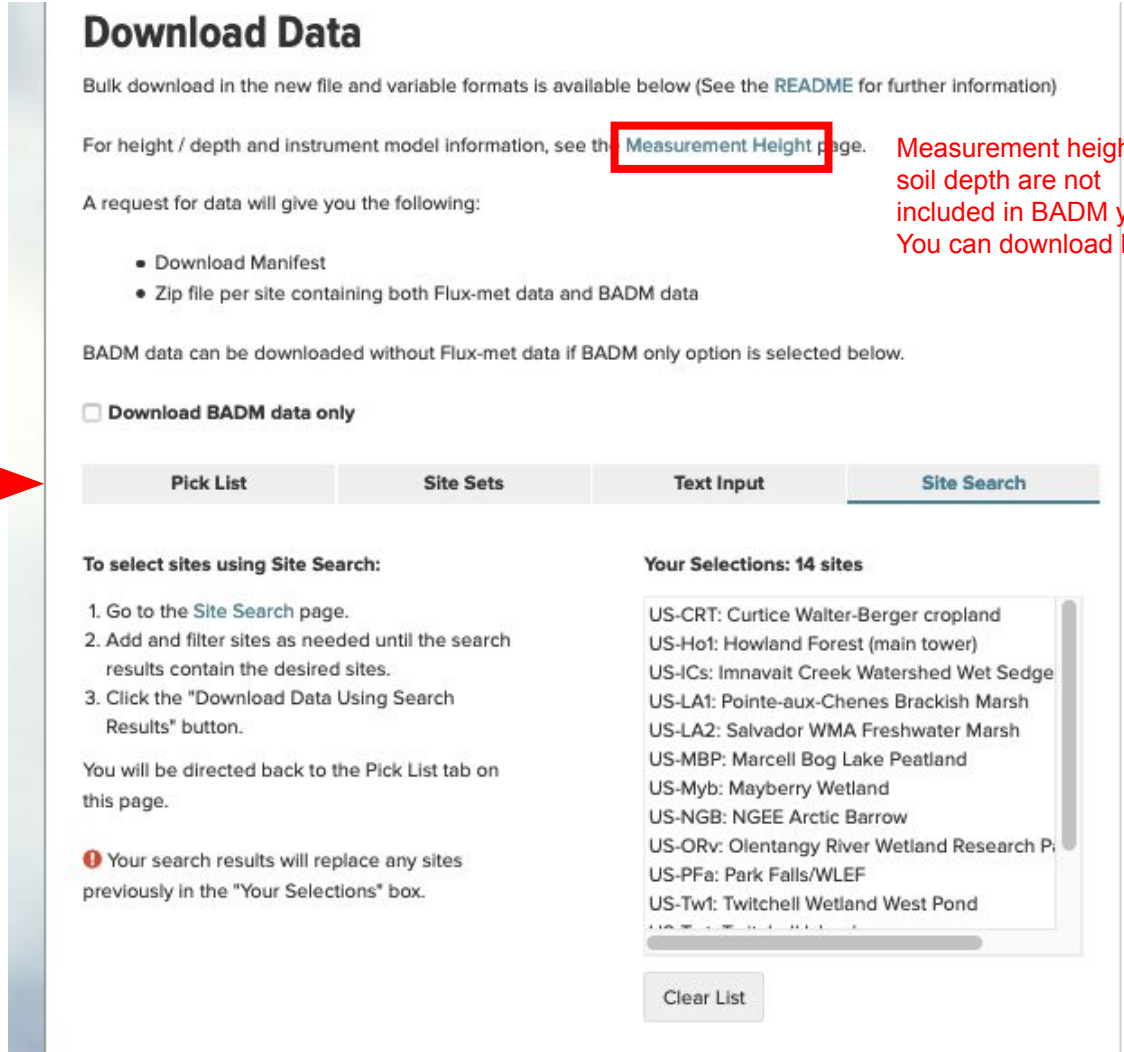


- Download data for those sites?

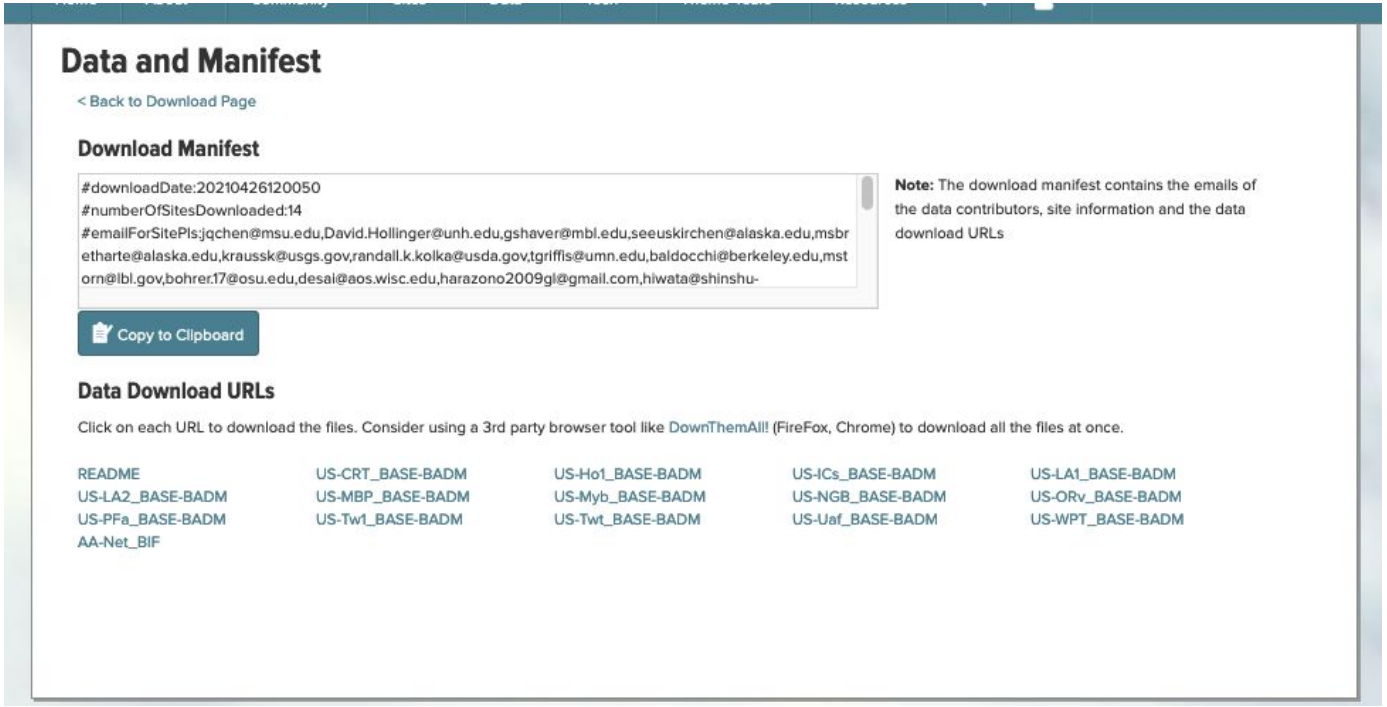


- Download data for those sites?

Cool!
Four ways to select sites for data download

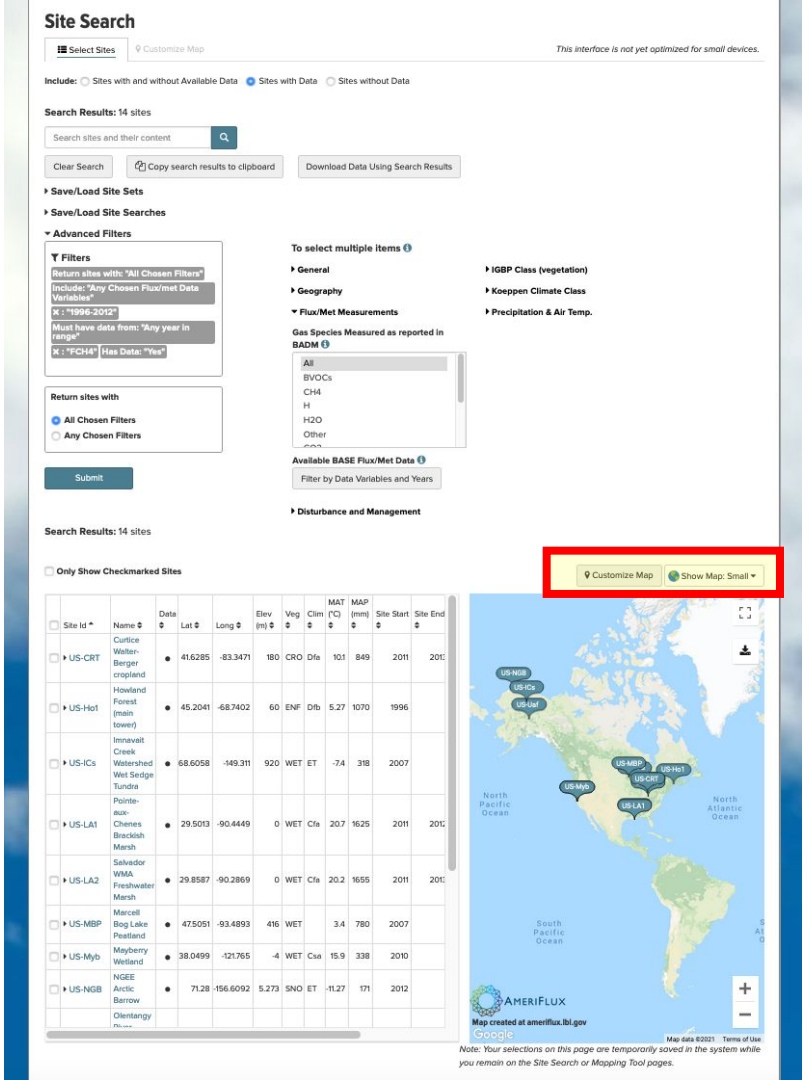


- Download data for those sites?



- Make a map of the sites?

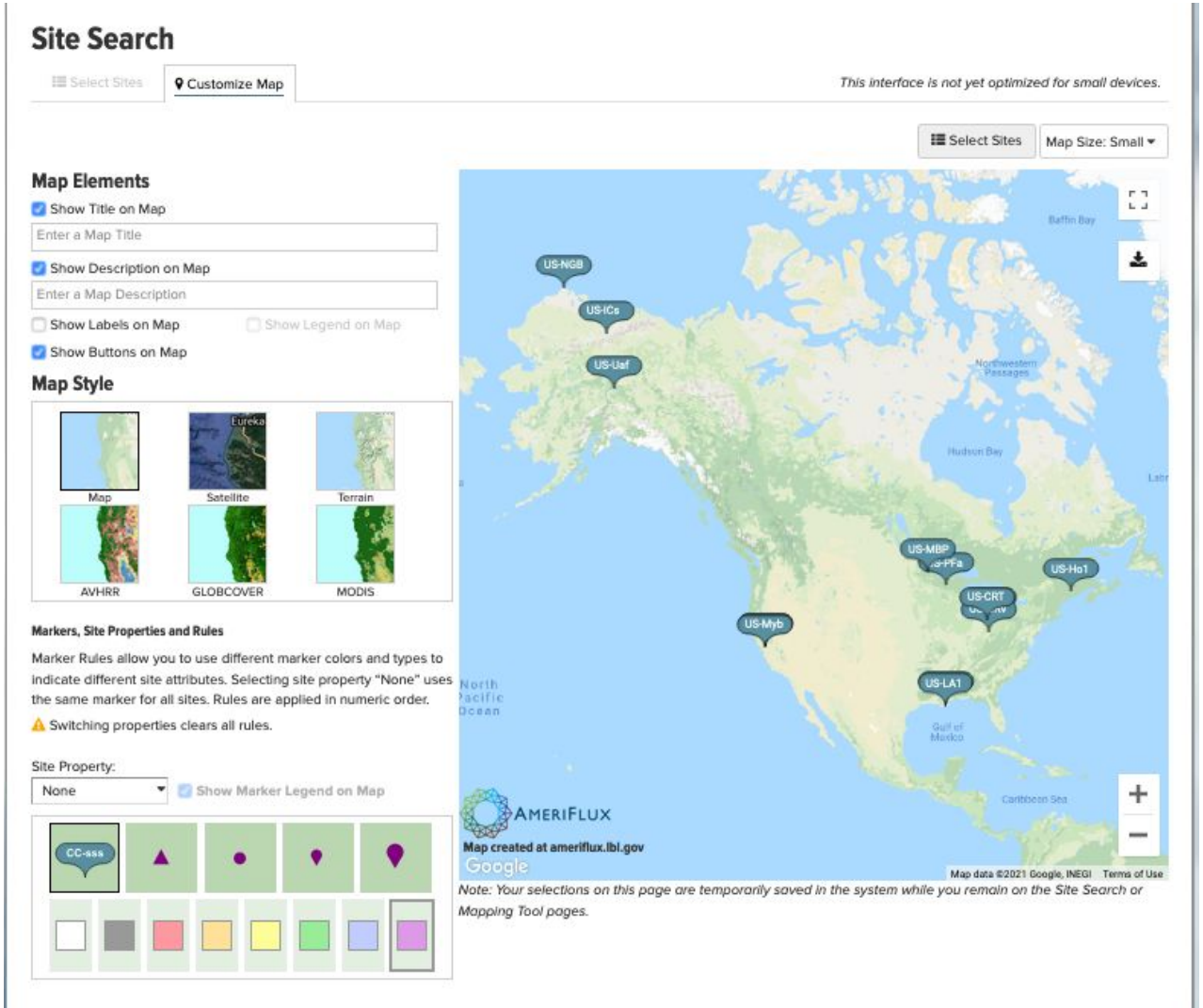
Select Custom Maps to change base layer and markers



- Make a map of the sites?

Custom Maps allows you to change base layer and markers, add title, and save as high resolution file.

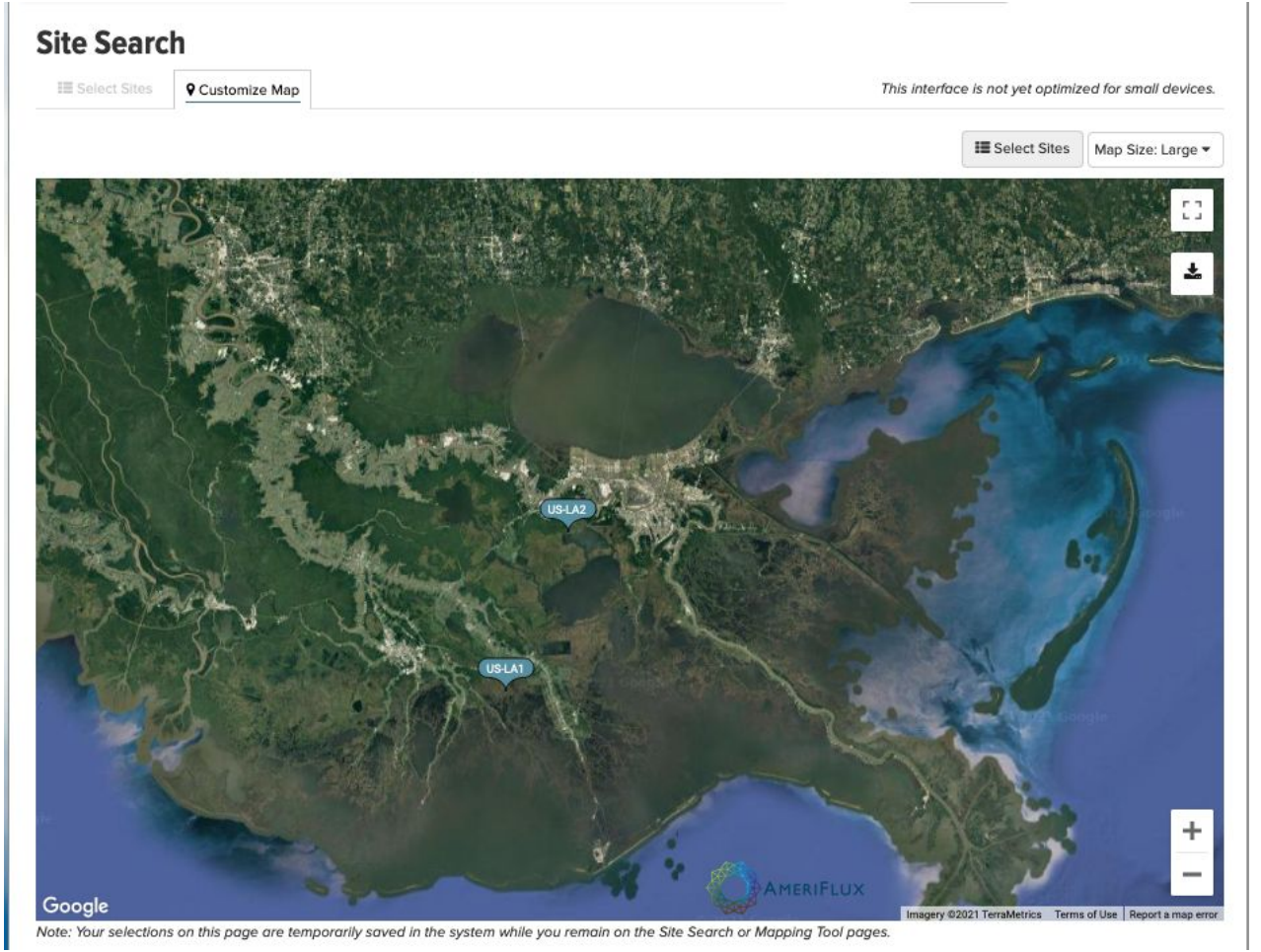
You can toggle between the Custom Map and Site Search pages



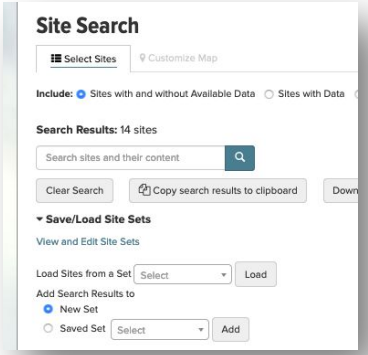
- Make a map of the sites?

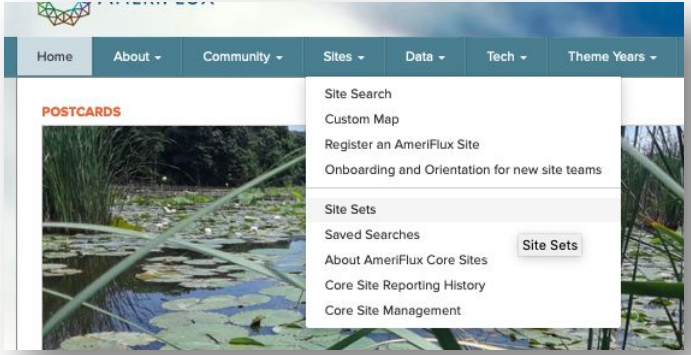
Zooming in on two of the 14 original methane flux sites.

They were right near New Orleans (where the 2021 AGU Fall Meeting will be!)



- Save a “site set” to work with later?





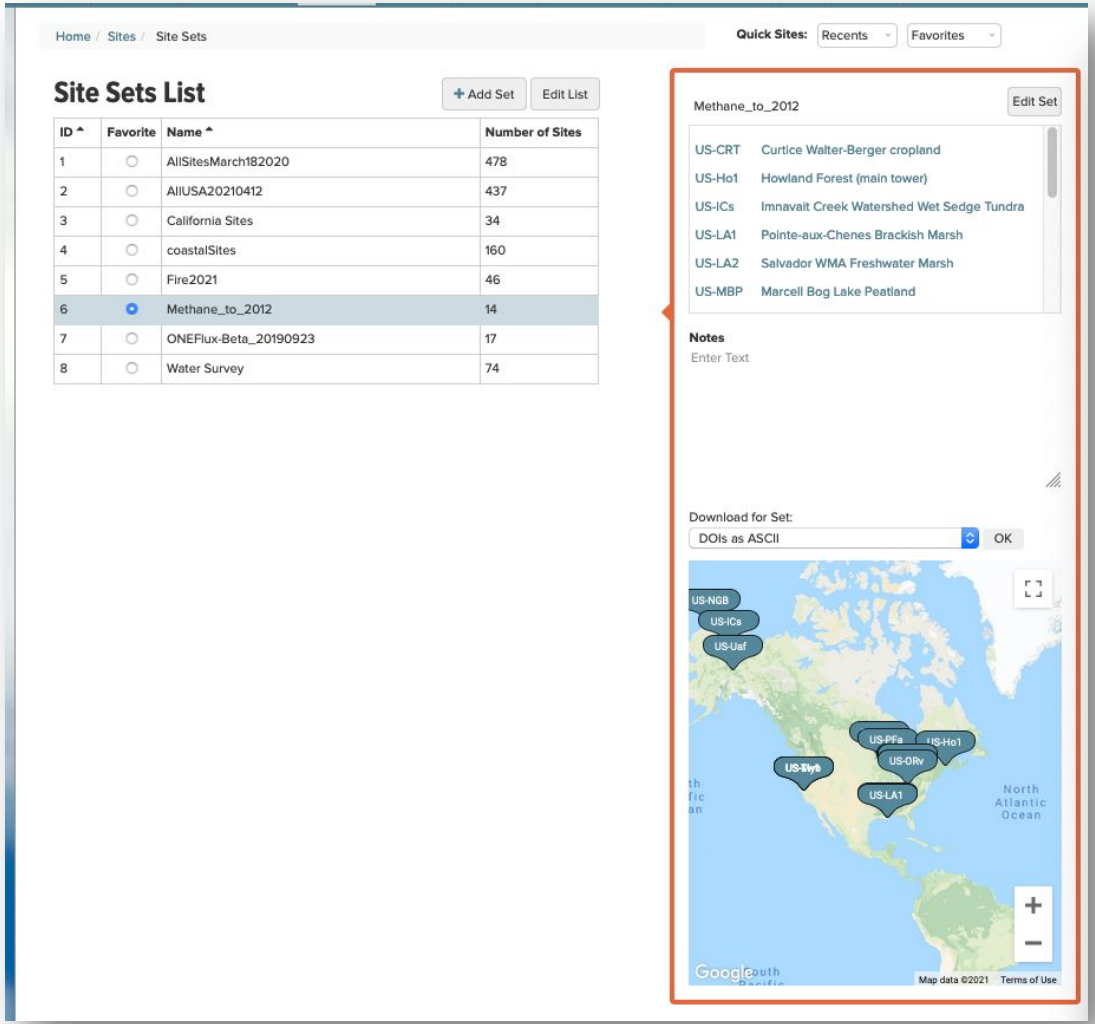
You can save or load a Site Set on the search page.

Or you can go straight to your Site Sets page from the Home menu, if you are logged in.

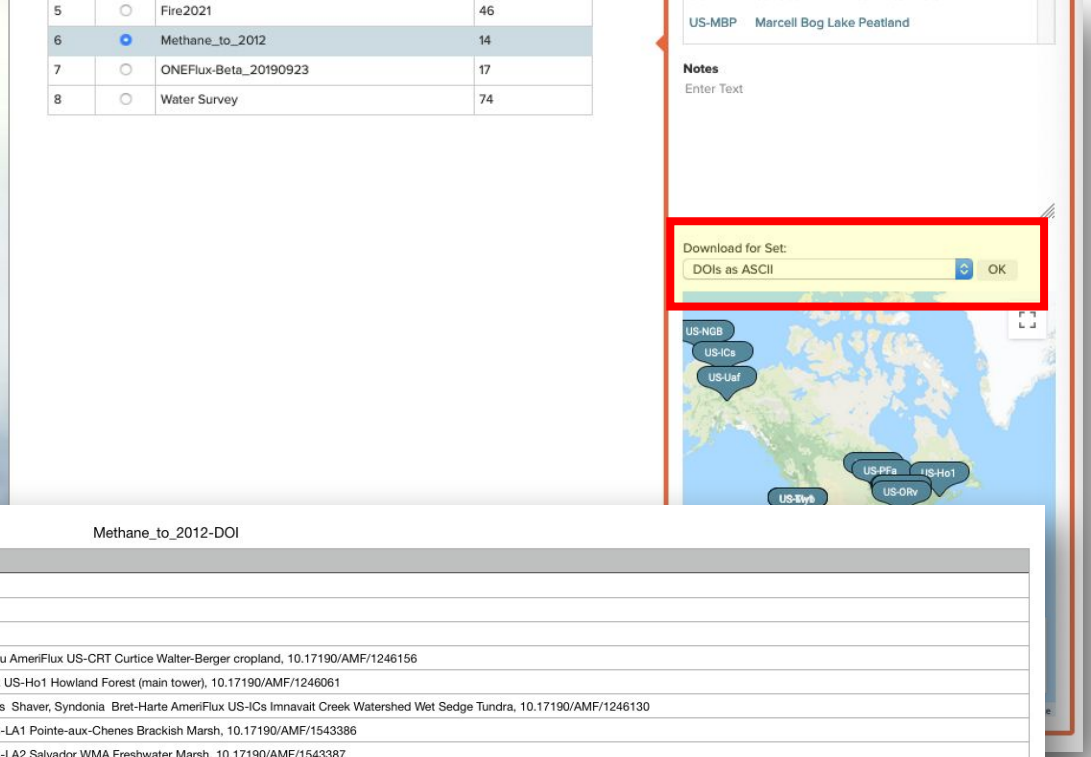
- Save a “site set” to work with later?

I created a site set for the 14 original methane flux sites.

This is what it looks like on the Site Sets page.



- Site sets make it easy to get citations, contact PIs, update searches / maps more



Methane_to_2012-DOI

#Set Name:	Methane_to_2012		
#Content:	Ameriflux DOIs		
Site ID	Site Name	DOI	Citation
US-CRT	Curtice Walter-Berger cropland	https://doi.org/10.17190/AMF/1246156	Jiquan Chen, Housen Chu AmeriFlux US-CRT Curtice Walter-Berger cropland, 10.17190/AMF/1246156
US-Ho1	Howland Forest (main tower)	https://doi.org/10.17190/AMF/1246061	David Hollinger AmeriFlux US-Ho1 Howland Forest (main tower), 10.17190/AMF/1246061
US-ICs	Imnavait Creek Watershed Wet Sedge Tundra	https://doi.org/10.17190/AMF/1246130	Eugenie Euskirchen, Gaius Shaver, Syndonia Bret-Harte AmeriFlux US-ICs Imnavait Creek Watershed Wet Sedge Tundra, 10.17190/AMF/1246130
US-LA1	Pointe-aux-Chenes Brackish Marsh	https://doi.org/10.17190/AMF/1543386	Ken Krauss AmeriFlux US-LA1 Pointe-aux-Chenes Brackish Marsh, 10.17190/AMF/1543386
US-LA2	Salvador WMA Freshwater Marsh	https://doi.org/10.17190/AMF/1543387	Ken Krauss AmeriFlux US-LA2 Salvador WMA Freshwater Marsh, 10.17190/AMF/1543387
US-MBP	Marcell Bog Lake Peatland	https://doi.org/10.17190/AMF/1767835	Randy Kolka, Timothy Griffis AmeriFlux US-MBP Marcell Bog Lake Peatland, 10.17190/AMF/1767835
US-Myb	Mayberry Wetland	https://doi.org/10.17190/AMF/1246139	Jaclyn Hatala Matthes, Cove Sturtevant, Patty Oikawa, Samuel D Chamberlain, Daphne Szutu, Ariane Arias Ortiz, Joseph Verfaillie, Dennis Baldocchi AmeriFlux US-Myb Mayberry Wetland, 10.17190/AMF/1246139
US-NGB	NGEE Arctic Barrow	https://doi.org/10.17190/AMF/1436326	Margaret Torn, Sigrid Dengel AmeriFlux US-NGB NGEE Arctic Barrow, 10.17190/AMF/1436326
US-ORv	Olentangy River Wetland Research Park	https://doi.org/10.17190/AMF/1246135	Gil Bohrer AmeriFlux US-ORv Olentangy River Wetland Research Park, 10.17190/AMF/1246135
US-PFa	Park Falls/WLEF	https://doi.org/10.17190/AMF/1246090	Ankur Desai AmeriFlux US-PFa Park Falls/WLEF, 10.17190/AMF/1246090
US-Tw1	Twitchell Wetland West Pond	https://doi.org/10.17190/AMF/1246147	Alex Valach, Daphne Szutu, Elke Eichelmann, Sara Knox, Joseph Verfaillie, Dennis Baldocchi AmeriFlux US-Tw1 Twitchell Wetland West Pond, 10.17190/AMF/1246147
US-Twt	Twitchell Island	https://doi.org/10.17190/AMF/1246140	Sara Knox, Jaclyn Hatala Matthes, Joseph Verfaillie, Dennis Baldocchi AmeriFlux US-Twt Twitchell Island, 10.17190/AMF/1246140
US-Uaf	University of Alaska, Fairbanks	https://doi.org/10.17190/AMF/1480322	Masahito Ueyama, Hiroki Iwata, Yoshinobu Harazono AmeriFlux US-Uaf University of Alaska, Fairbanks, 10.17190/AMF/1480322
US-WPT	Winous Point North Marsh	https://doi.org/10.17190/AMF/1246155	Jiquan Chen, Housen Chu AmeriFlux US-WPT Winous Point North Marsh, 10.17190/AMF/1246155

Running Poll (we'll revisit suggestions at the end of the webinar):

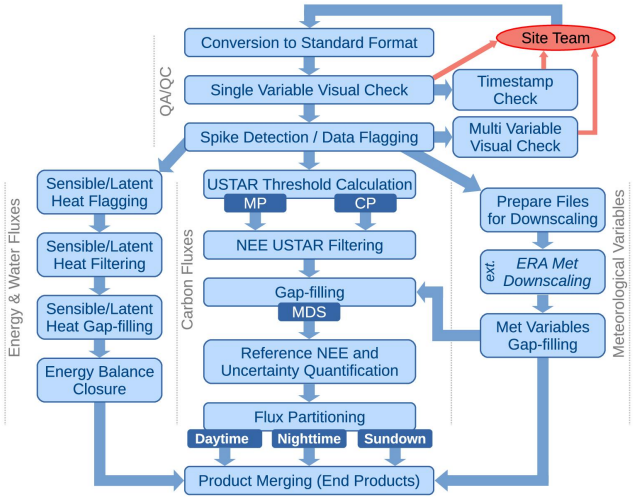
What features would you like to see from AmeriFlux?

Link to poll  pollev.com/ameriflux

ONEFlux:
Open Network-Enabled Flux processing pipeline


Gilberto Pastorello

- ONEFlux is an eddy covariance data processing codes package
- Key features: USTAR filtering, met/flux gap-filling, CO_2 flux partitioning, uncertainty estimates, ...



For more, check out:

- Paper:

Data Descriptor | Open Access | Published: 09 July 2020

The FLUXNET2015 dataset and the ONEFlux processing pipeline for eddy covariance data

Gilberto Pastorello, Carlo Trotta, [...] Dario Papale

Scientific Data 7, Article number: 225 (2020) | Cite this article

https://www.nature.com/articles/s41597-020-0534-3

- Quick-start guide (flux variables): https://fluxnet.org/data/fluxnet2015-dataset/variables-quick-start-guide/

- Webinar:

Requirements for processing data from an AmeriFlux site using ONEFlux


Danielle Christianson


Housen Chu


Gilberto Pastorello


Dario Papale

AMP webinar series
October 19th, 2020

https://youtu.be/JPJnfckAMtI

FLUXNET Data Product ...*from ONEFlux Processing*

FLUXNET2015

https://fluxnet.org/data/fluxnet2015-dataset/

Up to 2014

Last update Feb 2020 (additional metadata)

AmeriFlux FLUXNET Beta Product

https://ameriflux.lbl.gov/data/download-data-oneflux-beta/

Largely compatible with FLUXNET2015

More recent AmeriFlux data

Xinchen Lu

AmeriFlux FLUXNET Product (*in prep.*)

https://ameriflux.lbl.gov/

Production runs for AmeriFlux sites; currently starting collection of additional metadata to allow processing

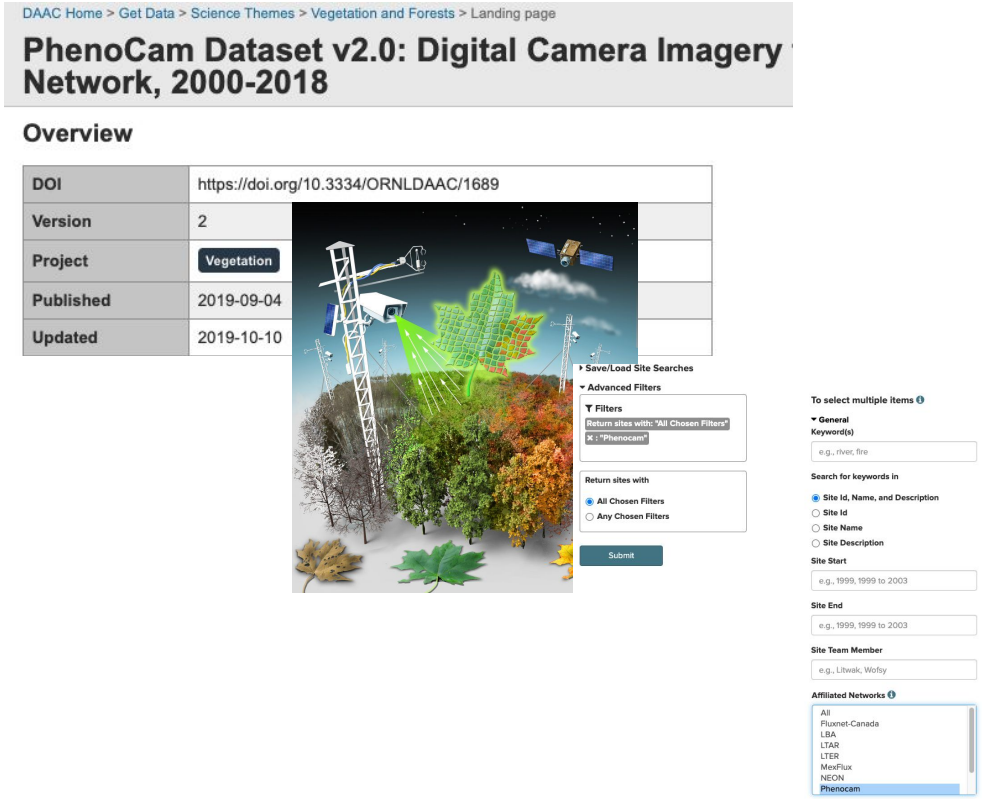
First few sites to be made available *Sep 2021*

AmeriFlux Data - collaborating resources

Collaborating networks - e.g., Phenocam

Collaborating agencies - e.g., NASA, USGS

Collaborating codebases



AmeriFlux Data - collaborating resources

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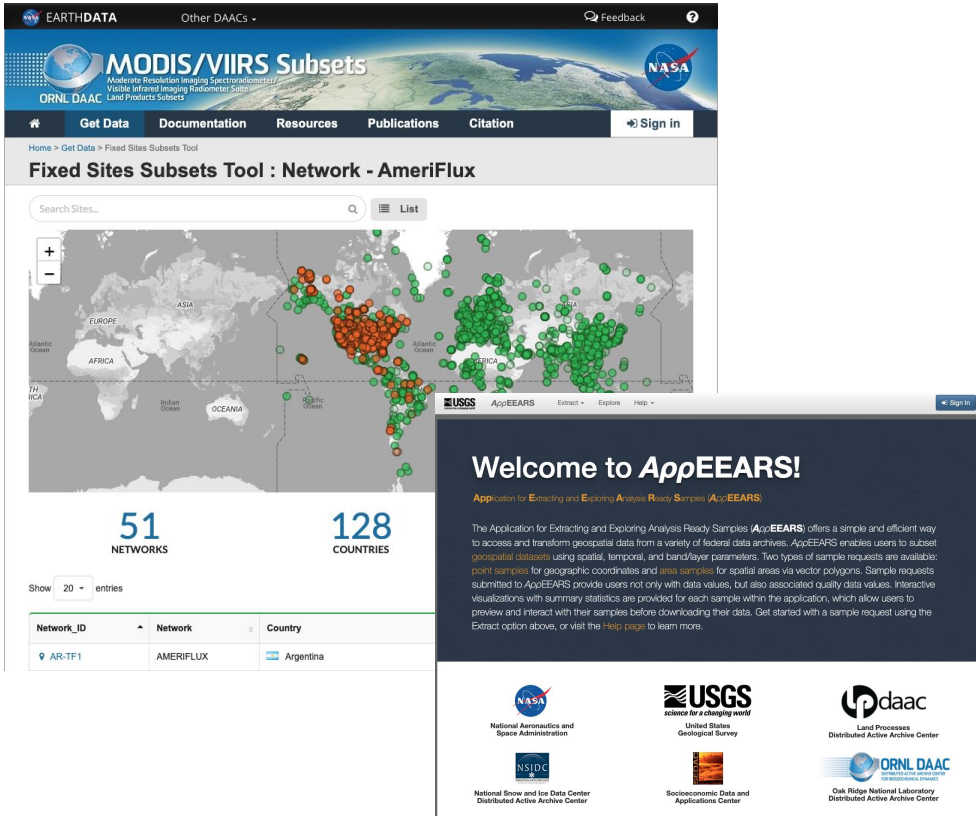

AmeriFlux Data - collaborating resources

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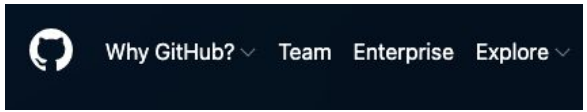
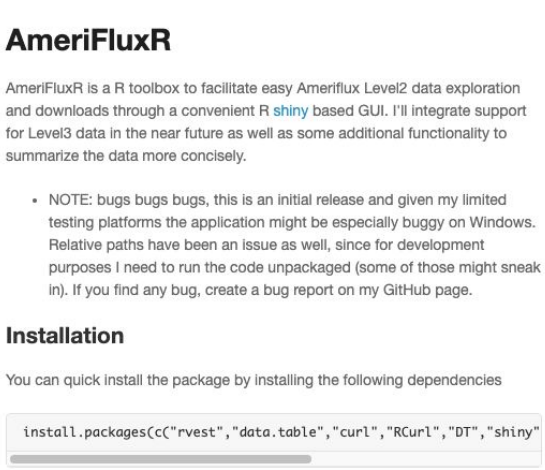




Recent data user experiences

Mallory Barnes
Assistant Prof.
Indiana University

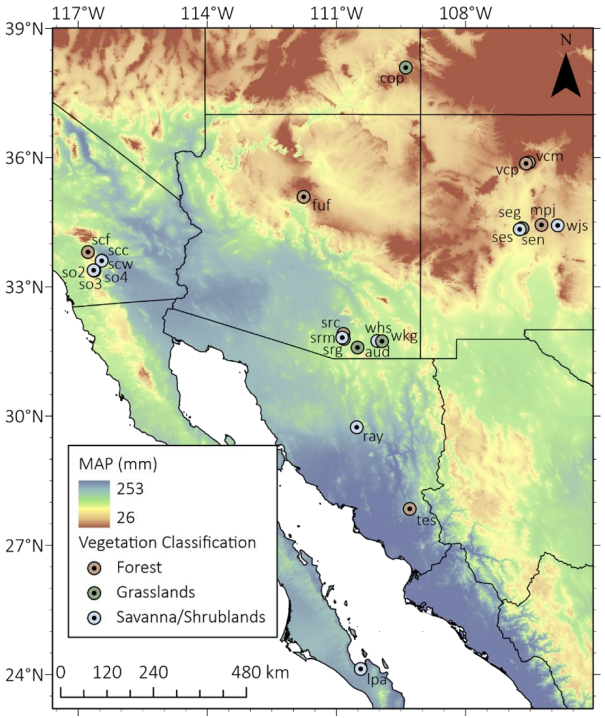
Minkyu Moon
Postdoc
Boston University

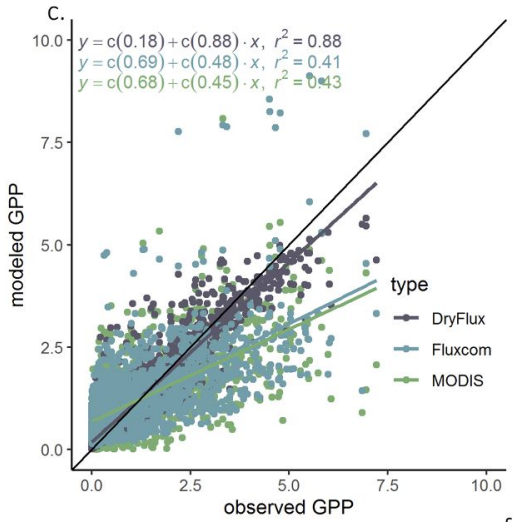
Sophie Ruehr
Grad Student
UC Berkeley

Recent data user experiences

Mallory Barnes
Assistant Prof.
Indiana University

Recent science enabled by AmeriFlux: Machine learning upscaling of dryland fluxes

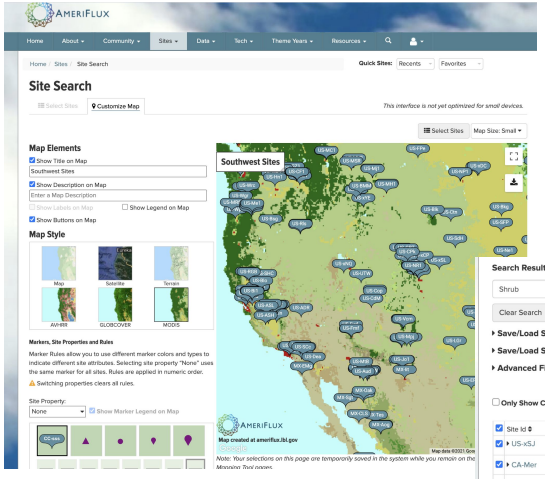


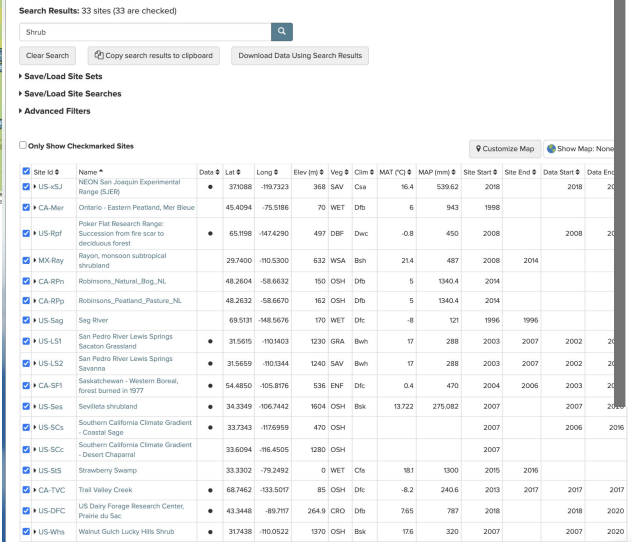


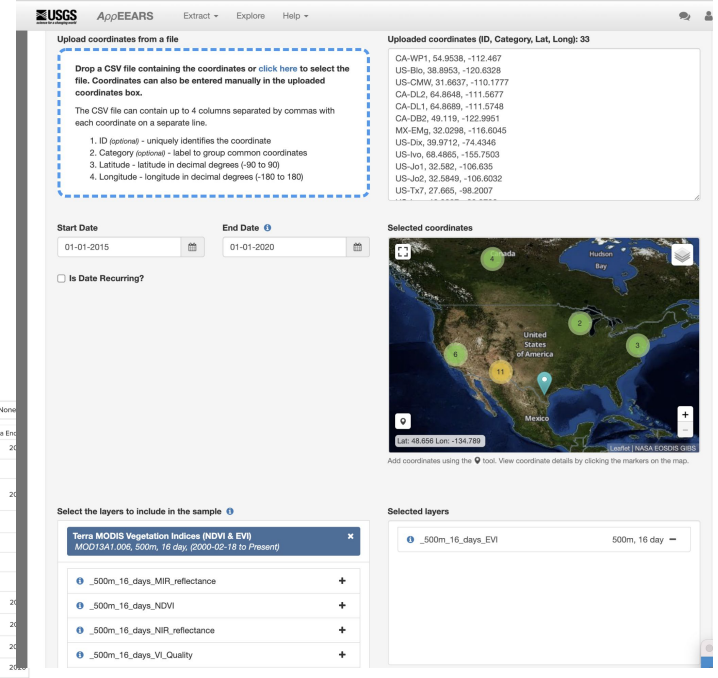
Barnes et al. 2021: Ecohydrological water-carbon coupling improves dryland carbon flux prediction of average uptake, interannual variability, and drought *in review*

Recent data user experiences

- AmeriFlux <-> AppEEARS makes it easy to get point remote sensing data!







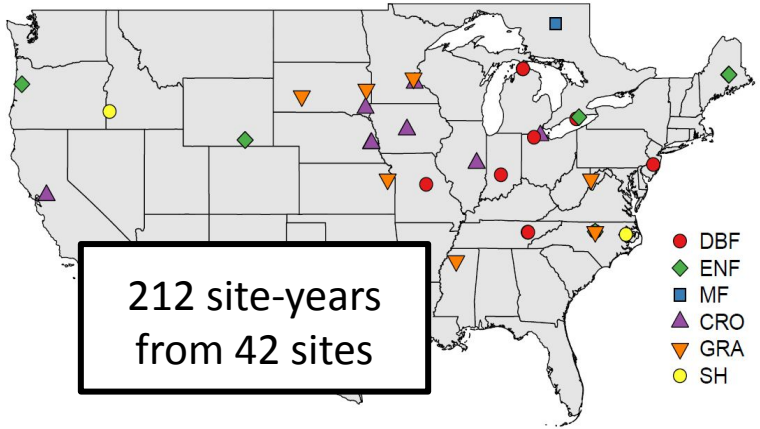
Recent data user experiences

Minkyu Moon
Postdoc
Boston University
LCSC Group

- Research Interest

remote sensing; vegetation phenology; forest ecology

- A multi-site synthesis and remote sensing study



Moon et al., 2020 Modification of surface energy balance during springtime: The relative importance of biophysical and meteorological changes. *AFM,* https://doi.org/10.1016/j.agrformet.2020.107905

- Hard to sort out sub-data set based on user's demand
  e.g., by...
  - vegetation type
  - data duration
  - variables
  - ancillary data
    (e.g.,NEON, PhenoCam, etc.)
  - ...

Recent data user experiences

Minkyu Moon
Postdoc
Boston University

- A package program → Updated “AmerifluxR”?

  e.g., “MODISTools” or “phenocamr” packages in R

- From data download to simple analysis…

  Example functions...

- Function 1

```
get_sites(veg_type = "DB",
          duration = 5,
          neon = TRUE,
          badm = TRUE,
          v_include = “soil heat flux”,
          ...)
```

- Function 2

```
aero_heightc(site = “US-Ha1”,
             Inputs = “...”,
             …)
```

Recent data user experiences

Sophie Ruehr
Grad Student
UC Berkeley

Starting a multi-site synthesis

Site Search

Select Sites | Customize Map

Include: Sites with and without Available Data | Sites with Data | Sites without Data

Search Results: 0 sites

Search sites and their content

Clear Search | Copy search results to clipboard | Download Data Using Search Results

Save/Load Site Sets

Save/Load Site Searches

Advanced Filters

Filters

Return sites with: "All Chosen Filters"

× BADM: "CO2" × : "CSH" × : "CRO" × : "BSV" × : "SAV" × : "OSH" × : "MF"

Return sites with

- All Chosen Filters
- Any Chosen Filters

Submit

To select multiple items

General

Geography

Flux/Met Measurements

Gas Species Measured as reported in BADM

Isotopes
Aerosols
H
H2O
Other
CH4
CO2
BVOCs

Available BASE Flux/Met Data

Filter by Data Variables and Years

IGBP Class (vegetation)

CSH - Closed Shrublands: Lands with woo
CRO - Croplands: Lands covered with tem
BSV - Barren Sparse Vegetation: Lands ex
SAV - Savannas: Lands with herbaceous a
OSH - Open Shrublands: Lands with wood
MF - Mixed Forests: Lands dominated by t
GRA - Grasslands: Lands with herbaceous
CVM - Cropland/Natural Vegetation Mosai

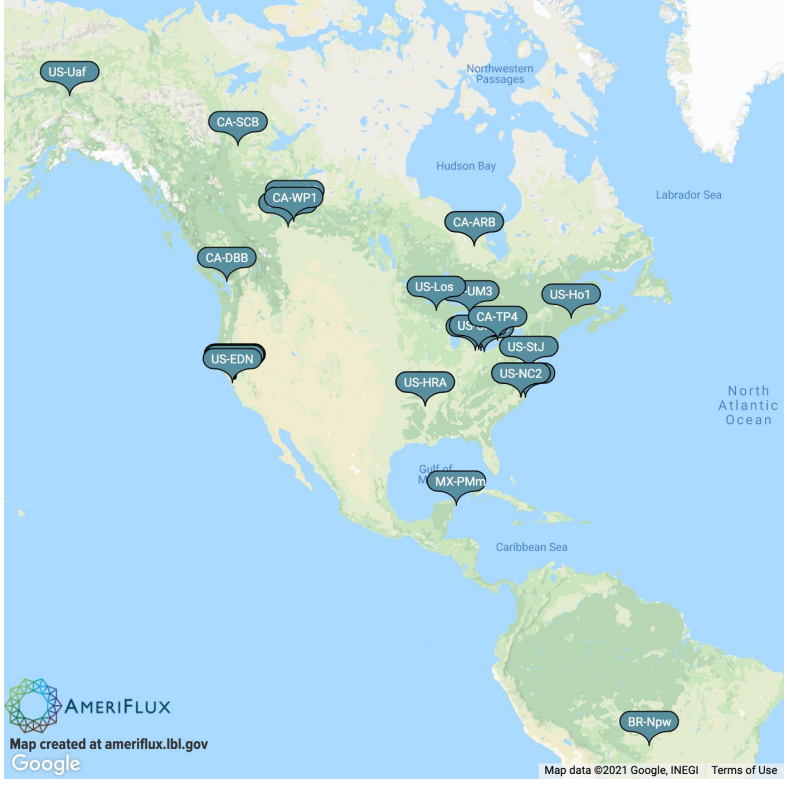
Koeppen Climate Class

All Climate Classes
Subarctic: severe winter, no dry season, c
Warm Summer Continental: significant pre
Humid Continental: humid with severe win
Temperate Highland: dry winter, cool sum
Temperate Highland: dry winter, warm sum
Humid Subtropical: dry winter, hot summer
Mediterranean: mild with dry, warm summe

Recent data user experiences

Sophie Ruehr
Grad Student
UC Berkeley

AmeriFlux sites reporting water table depth



Recent data user experiences

Sophie Ruehr
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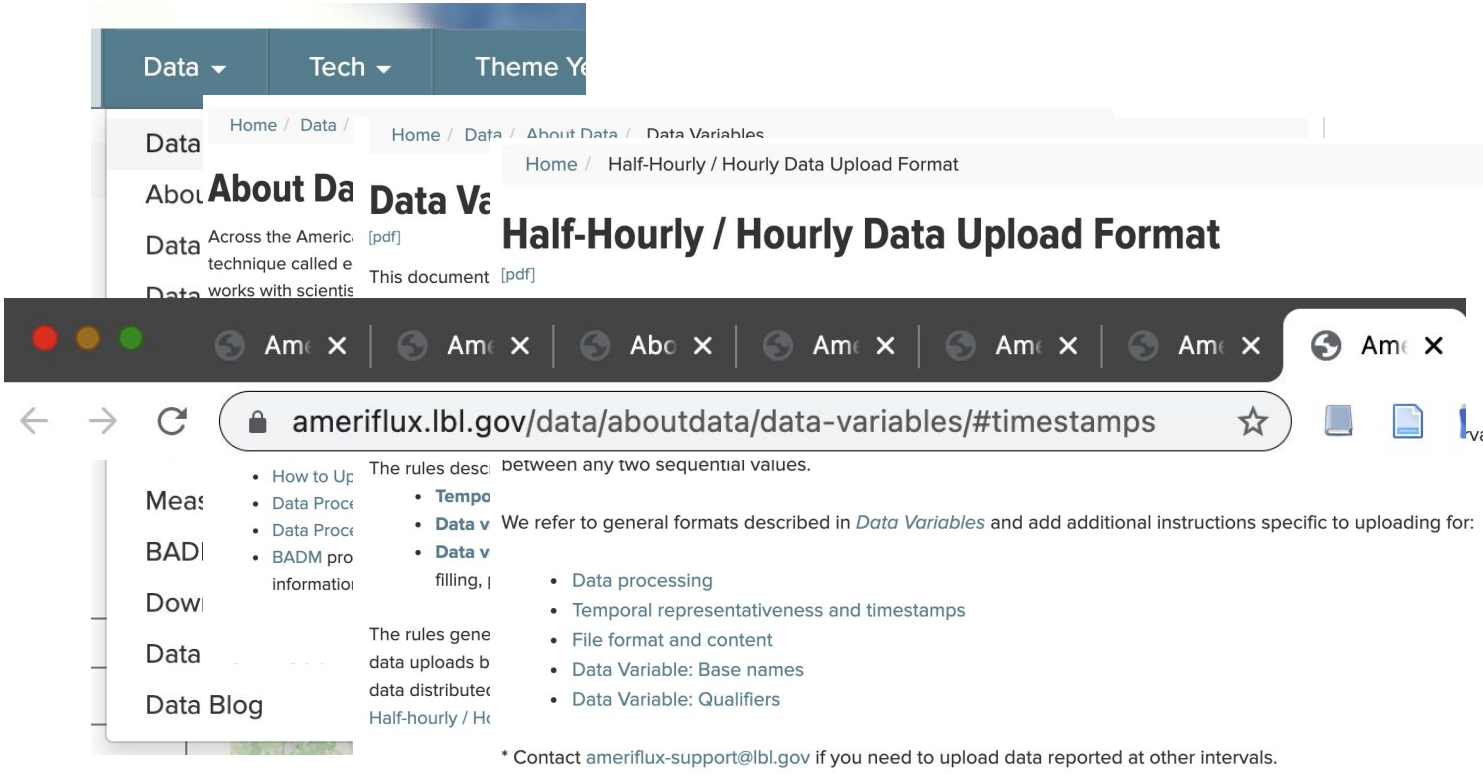

Poll:

What features would you like to see from AmeriFlux?

Link to poll  pollev.com/ameriflux

What features would you like to see from AmeriFlux?

Top

Thank you!

Special thanks to:

- Our user panel
- Our funders (DOE Office of Science)
- The AmeriFlux data contributors
- The AmeriFlux Management Project Team
- You, for putting the data to such great use